Appl. No. 09/915,082
Amdt. dated April 29, 2005
Reply to Office action of March 7, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A computer system, comprising:

a plurality of computers, each computer capable of being in one of a plurality of power states; and

a load balancer and power management logic coupled to said computers and to a network, wherein said load balancer and power management logic identifies a computer that is operating less efficiently than another computer and changes the power state of ~~at least one of said plurality of~~ the identified computer[[s]] based on transactions on said network.

2. (Original) The computer system of claim 1 wherein said network comprises the Internet.

3. (Currently amended) The computer system of claim 1 wherein said load balancer and power management logic determines when ~~the~~ an amount of transactions on said network drops below a threshold and when this occurs changes the power state of ~~at least one of said plurality of~~ said identified computer[[s]] to a state that uses less electrical power.

4. (Currently amended) The computer system of claim 3 wherein said state that ~~consumes~~ uses less power is the state in which the computer is off.

5. (Currently amended) The computer system of claim 3 wherein said state that consumes less power is the state in which the identified computer is operational but with diminished capability.

6. (Original) The computer system of claim 1 wherein said power state includes a state selected from the group consisting of fully operational, reduced power, and off.

7. (Currently amended) The computer system of claim 6 wherein in said reduced power state the identified computer is operational at diminished capacity.

8. (Currently amended) The computer system of claim 1 wherein said load balancer and power management logic identifies the computer that is operating less efficiently by ~~provides transactions from said network to said plurality of computers and~~ considering[[s]] how fast each of said computers responds to ~~said~~ transactions ~~when changing the power state of a computer~~.

9. (Currently amended) A computer system, comprising:

a load balancer computer having a connection to a network and receiving transactions from said network;

a master power management agent (PMA) coupled to said load balancer;

a plurality of transaction processing computers coupled to said load balancer computer and said master power management agent and receiving said transactions from said load balancer computer for processing, each of said transaction processing computers having multiple power states;

wherein said master PMA determines when a specified condition is true and when said condition is true causing the ~~power state of a~~ transaction processing computer that is determined to operate slower than another computer to change from one power state to another power state.

10. (Currently amended) The computer system of claim 9 wherein said condition includes ~~the~~ a rate of transactions received by the load balancer from the network falling below a threshold.

11. (Currently amended) The computer system of claim 10 wherein said master PMA selects~~ing~~ a transaction processing computer to change its power state based on how fast the transaction processing computer responds to transactions from said load balancer.

12. (Currently amended) The computer system of claim 11 wherein each of said transaction processing computers reports how fast the transaction processing computer responds to said transactions to said master PMA.

13. (Original) The computer system of claim 11 wherein said load balancer monitors how fast each of said transaction processing computers respond to transactions.

14. (Original) The computer system of claim 9 wherein each of said transaction processing computers includes slave PMA software that causes said transaction processing computer to respond to commands from said master PMA to change power state.

15. (Currently amended) The computer system of claim 9 wherein if said condition is true, said master PMA causes the ~~state of a~~ transaction processing computer determined to operate slower to change to a state that draws less power.

16. (Currently amended) The computer system of claim 15 wherein said state that draws less power is ~~the~~ an off state.

17. (Original) The computer system of claim 16 wherein said transaction processing computer in said off state can be woken remotely by a command from said master PMA.

18. (Original) The computer system of 15 wherein said state that draws less power is a state in which the said state that draws less power is operational, but at reduced functionality.

19. (Currently amended) The computer system of claim 18 wherein said transaction processing computer determined to operate slower includes a disk drive and said reduced functionality includes turning off said disk drive.

20. (Currently amended) The computer system of claim 18 wherein said transaction processing computer determined to operate slower includes a processor that receives a clock signal and said reduced functionality includes reducing ~~the~~ a frequency of said clock signal.

21. (Currently amended) A data center, comprising:
a master power management agent (PMA) coupled to a first network;
a plurality of transaction processing computers coupled to first network;
a management control console coupled to said first network and permitting a user ~~via~~ to specify an upper limit for power usage by said data center and said master PMA maximizes ~~the~~ a performance of the data center for ~~the~~ a specified power limit by changing an operational state of a transaction processing computer that is determined to operate slower than at least one other transaction processing computer.

22. (Original) The data center of claim 21 further including a load balancer computer having a connection to a second network over which the load balancer computer receives transactions and coupled to said first network over which said transactions are delivered to the transaction processing computers for further processing.

23. (Original) The data center of claim 21 wherein each transaction processing computer includes power control logic which provides power usage information to said master PMA.

24. (Currently amended) The data center of claim 21 wherein each transaction processing computer includes power control logic which can transition ~~the~~ each transaction processing computer from one power state to another.

25. (Original) The data center of claim 21 wherein said master PMA transitions said transaction processing computers between power states, said power states selected from the group consisting of fully operational, reduced power and off.

26. (Currently amended) A data center, comprising:
a master power management agent (PMA) coupled to a first network;
a plurality of transaction processing computers coupled to first network;
wherein a user via ~~said~~ a management control console can specify a performance criterion for said data center and said master PMA ~~minimizes~~ reduces ~~the~~ an overall power usage of the data center for ~~the~~ a specified performance criterion by causing a transaction processing computer, determined to be operating less efficiently than another transaction processing computer, to transition to a lower power consumption state.

27. (Original) The data center of claim 26 further including a load balancer computer having a connection to a second network over which the load balancer computer receives transactions and coupled to said first network over which said transactions are delivered to the transaction processing computers for further processing.

28. (Original) The data center of claim 26 wherein each transaction processing computer includes power control logic which provides power usage information to said master PMA.

29. (Currently amended) The data center of claim 26 wherein each transaction processing computer includes power control logic which can transition the transaction processing computer, determined to be operating less efficiently, from one power state to another.

30. (Currently amended) A method of managing power in a computer network which includes a plurality of computers, comprising:

~~(a)~~ monitoring a parameter associated with the network;

~~(b)~~ determining when said parameter falls outside a defined range; ~~and~~ identifying a computer that is operating slower than another computer; and

~~(c)~~ if said parameter falls outside a defined range, changing a power state of ~~at least one~~ the identified computer.

31. (Original) The method of claim 30 wherein said parameter includes the rate of transactions received by said computer network.

32. (Original) The method of claim 31 wherein said range includes a threshold below which said changing step is performed.

33. (Currently amended) The method of claim 30 wherein identifying the computer comprises identifying the computer that ~~(c) further includes selecting the computer that~~ performs transactions slower ~~slowest~~ than all other computers as the computer for changing a power state.

34. (Currently amended) The method of claim 30 wherein the identified computer has its power state ~~of the computer after (c) is performed comprises~~

changed to a state ~~in which said computer~~ that consumes less power than the power state ~~of said~~ before the change~~computer before (c) is performed~~.

35. (Currently amended) A computer system, comprising:

a plurality of computers coupled together over a network, each computer capable of being in one of a plurality of power states; and

power management logic coupled to said computers and to said network, wherein said power management logic changes the power state of at least one of said plurality of computers that is determined to operate with less efficiency than another computer based on a protocol.

36. (Currently amended) The computer system of claim 35 wherein said protocol includes a time sequence in which computer system power usage is specified for certain periods of time and said power management logic adjusts the power state[[s]] of said at least one computer[[s]] determined to operate with less efficiency to conform with said time sequence.

37. (Currently amended) The computer system of claim 36 wherein said power management logic selects a computer to transition to a new power state based on ~~the~~ a performance of said computer relative to other of said computers.

38. (Original) The computer system of claim 35 wherein said protocol includes a time sequence in which computer system power usage is specified for certain periods of time and a rule which specifies a limit of system behavior.

39. (Original) The computer system of claim 35 wherein said protocol includes a time sequence in which computer system power usage is specified for certain periods of time, a rule which specifies a limit of system behavior and adaptive learning based on temporal performance of the computer system.

40. (Original) The computer system of claim 35 wherein said protocol includes maintaining the power draw of the system below a threshold while maximizing performance.

41. (Original) The computer system of claim 35 wherein said protocol includes maintaining the heat dissipation of the system below a threshold.

42. (Currently amended) The computer system of claim 35 wherein said protocol includes maintaining the heat dissipation of the system below a threshold while maximizing performance.